ridge-pole of a rather steep roof; 2°, the tracing must exhibit the serration effect for at least one hour, and must have in that hour not less than two downward motions of the pencil at least .050 of an inch below the general trace of the pressure at the time. GAN.

Sept. 10.

'Communistic leanings.'

In your reports of papers read at the Buffalo meeting of the American association for the advancement of science, you refer, in the following terms (*Science*, Sept. 3, p. 219), to a paper read by me before the section of political economy and statistics: "The theory of rent and its practical bearings was discussed by Edward T. Peters of Washington, and with such communistic leanings as to meet little approval."

This language is calculated to convey to the reader's mind an entirely erroneous idea of the paper referred to. That it is not based upon knowledge will appear from the fact that the title quoted is one which I submitted when my paper was only in part written, and for which I afterwards substituted a title better suited to the narrower ground to which, on the score of time, I found it necessary to confine myself. That title, as may be seen by referring to the programme of proceedings for Aug. 24, was 'Errors in the Ricardian theory of rent.' In the treatment of this subject I was not conscious of any 'leanings' except a leaning to scientific truth, my paper being simply an attempt to determine whether certain propositions embraced in the Ricardian doctrine logically flow from the assumptions upon which the doctrine is supposed to be founded, and also to compare them with certain very conspicuous economic phenomena, in order to ascertain how far the theory agrees with the facts of experience.

I will not ask space for a statement of my views on the general subject in question; but it would interest me to know whether *Science*, which may be supposed to appreciate the significance of words, and to use them responsibly, — which, moreover, has of late done itself honor by the breadth of its hospitality to various shades of economic thought, — would stigmatize as 'communistic' the proposal of John Stuart Mill "to intercept by taxation for the benefit of the state the unearned increase in the rent of land;" whether it would apply a like epithet to the proposal of Dr. Adolph Wagner, the distinguished professor of political economy in the University of Berlin, "that municipalities [I quote from 'Land and its rent,' by President Walker] should purchase all town property, in order to realize therefrom the progressive increase of values;" or, finally, whether the character of an opinion, and the epithets fitted to describe it, depend entirely on the degree of prominence of the person from whom it emanates.

I observe, in the first paragraph of your report of the proceedings of Section I, the statement that the section had, at the Buffalo meeting, "been comparatively free from the attacks of socialistic and economic cranks, to which it is especially subject." I trust it will always be successful in keeping off 'cranks' of every description; but I quite as earnestly hope that no sickly fear of giving audience to unpopular opinions will induce it to set up a narrow philistine standard of economic orthodoxy, and brand as 'communists' or 'cranks' all who fail to conform to it. The 'approval' of a body conducted upon such principles could be readily dispensed with.

Political economy, as Prof. H. C. Adams, in one of the excellent economic papers recently published in *Science*, has well said, might be appropriately defined as the science which 'treats of industrial society.' Its especial province is, therefore, in a large degree, the arena of clashing interests; and unless Section I of the American association proposes, as a section of 'economic science,' to enact the play of Hamlet with the part of Hamlet left out, it must always, from the very nature of its functions, be 'especially subject' to the introduction of disturbing social questions, and must often hear views advanced which, however sound in themselves, and however disinterestedly scientific in their origin and spirit, will meet but 'little approval' from the men or classes whose interests or prejudices they may happen to antagonize.

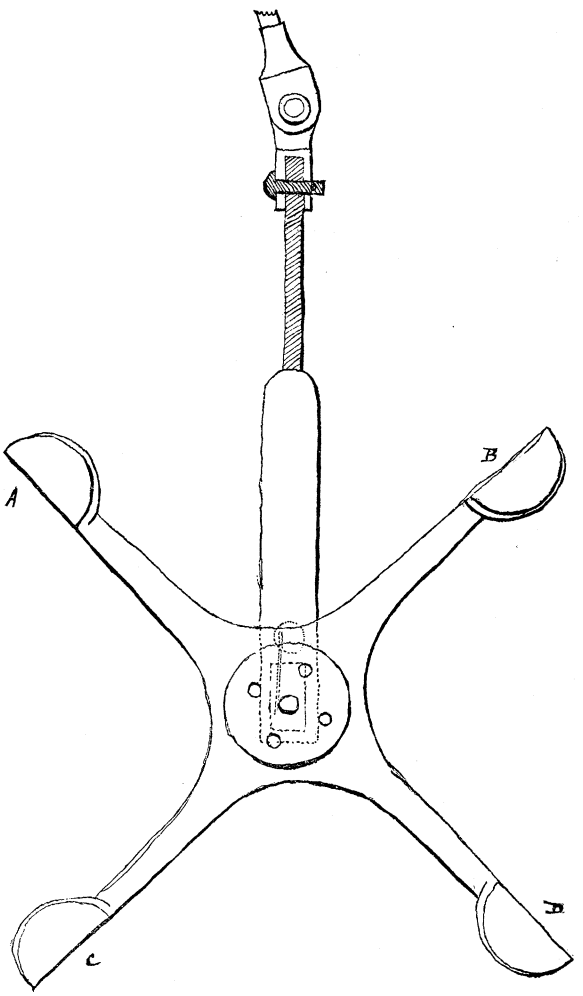
E. T. PETERS.

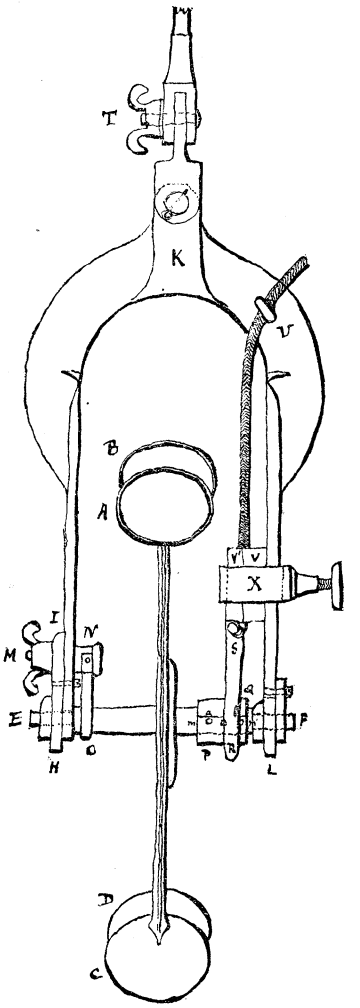
Washington, D.C., Sept. 9.

An electric log.

In May, 1882, I sailed from Marseilles for the Piraeus on the steamship Ava; Capt. Aug. Bretel, of the Compagnie des messageries maritimes, commanding. A short time after going aboard, I noticed a small rope running through the saloon over the cabin doors to the after skylight, and thence along the side of the ship to the stern, where it was made fast. The next day I saw the captain and the first officer looking at a curious instrument, which looked something like an aerometer, except that the cups revolved in a vertical position. This instrument was fastened to the rope which I have mentioned, and thrown overboard, the captain meanwhile watching the revolutions of the wheel through a powerful field-glass. As it did not seem to work satisfactorily, it was hauled in; and I noticed that the captain, in making some repairs to the rope, used a stick of Chatterton's compound. This led me to believe that there was a copper conductor in it, and that electricity in some form was being employed. There was no opportunity at that time to make inquiries; but a few days later the captain kindly permitted me to see the instrument, which he called a 'loch-moulinet,' or 'electrical-mill-log.' After throwing it again into the water, he took me forward and showed me the earth connection, which was soldered fast to one of the iron beams of the ship. Thence the wire went through the chart-room to the wheel-house, where there was a telephone. This electric log, it seems, was the joint invention of Capts. G. Fleuriais and Bretel, and was so arranged, that, when connected with the cable, it formed part of an electric circuit, which was opened and closed with every revolution of the copper shaft to which the four cups or hemispheres were attached. The number of revolutions made by the shaft in a given time was of course dependent upon the speed with which the cups were dragged through the water; in other words, regulated by the rate of motion at which the ship was moving. A table had been prepared by the inventors, showing the number of knots per hour corresponding to the number of revolutions of the shaft in a half-minute. On placing the log and telephone, so arranged that it could be switched, in circuit, every revolution of the shaft, and consequent closing of the circuit, caused a click, plainly audible to any one listening at the telephone. The log having been allowed to run out to such a distance as to be practically free from the influence of the screw, I listened

at the telephone. The sound, like a tapping on the diaphragm of the telephone, came clear and distinct; and, when the captain turned the half-minute glass, I had no difficulty in counting the revolutions of the shaft, seventy-four in number. On referring to the table, it appeared that we were making eight and five-tenths knots, which was the exact speed of the ship as shown also by the revolutions of the engine. The experiment was very satisfactory and extremely interesting. Captain Bretel wrote out a description of his invention, with drawings, which he gave to me.





In the accompanying diagram, *A*, *B*, *C*, *D*, are four hemispherical cups on the ends of four arms affixed to a brass shaft, *E F*, which revolves freely in lignum-vitae bearings at the extremities of the jaw *H K L*. For convenience in removing the shaft, the bearing at *H* is detachable, being secured in place by the wing-nut *I*. At one end of the shaft is a small lignum-vitae pulley, *P Q*, having on one side a strip of copper, *mm'*, fastened in position by screws passing through the shaft, which screws make electrical connection between the copper strip and the shaft. An elastic tongue, *O*, on the screw *N*, bears upon the other end of the shaft, giving metallic contact between shaft and jaw. The log is towed some distance astern of the vessel by a log-rope, which is attached to the jaw by a copper shank and a clamping-screw, *T*. To this copper shank is secured a strip of zinc, thus forming a weak galvanic battery.

An insulated wire furnishes electrical connection between the commutator brush or tongue, *R S*, and a Bell telephone in the chart-room of the ship, the wire making several spiral turns around the log-rope to guard against snarling. With the log thus towing astern of the vessel, it is evident that at every revolution of the log-wheel *A B C D* an electric circuit between the telephone and the zinc and copper of the shank is made and broken by means of the copper strip *mm'* of the lignum-vitae roller coming into contact with the elastic tongue *R S*, each 'make and break' being signalled by a tick of the telephone. To

find the speed of the ship at any time, it is only necessary to count the number of ticks to the half-minute, as measured by the sand-glass, and read off from a converting table the number of knots and fractions corresponding to that number.

SAM HUBBARD.

Science for a livelihood.

I am interested in the communication from C. B., Brooklyn, N.Y., under the above caption in the issue of *Science* for Sept. 10. Like C. B., I graduated with a good scientific education, had done some practical work, and possessed a greater desire to labor in scientific fields than to do any thing else.

Instead of making application to only four schools, however, I applied to over sixty, and received a negative answer from all of them, and at the end of it was told by an eminent professor in Harvard university that there were at least fifteen applicants for every vacant place of the kind in the United States.

That was nine years ago, and my experience since confirms me in the belief, that if the student is without wealth, and has no friends who will forward him in his chosen field, he will do wisest, and be most independent, if he turns his attention to agricultural, mechanical, or any other honest occupation by which he can make some money; and then, after his money is his own, he can put as much of it as he sees fit into his scientific work. Such a course may be galling to pride, and a disappointment to friends, but, in all probability, there are few positions in this country where a student of small means can find sufficient work in the natural or experimental sciences to earn bread enough to keep the wolf from the door.

W. F. FLINT.

Winchester, N.H., Sept. 13.

Sea-water in the ears.

Science for Sept. 10 has a paragraph on this subject, but omits to mention that the momentum of tidal waves as they break upon the beach in this locality is sufficient to drive the water through the bather's nostrils, and up along the eustachian tube to the ears. In no other way is greater damage done to the ear in sea-bathing than this, since one cannot voluntarily close both mouth and nose, like marine animals, while bathing. I once saw a person go into the water with his nose embraced by a clothespin, and the greater number of bathers now protect the ears with wool. As I very well know from personal experience, it is not always easy to keep water out of the ears in surf-bathing, but I believe accidents from this cause are less frequent than formerly.

SAMUEL SEXTON.

New York, Sept. 11.

An easy method of measuring the time of mental processes.

Mr. Jastrow's method of measuring 'simple reaction time' by means of a circle of people, as described in *Science* of Sept. 10, was first used, as far as I know, by Dr. Holmes, who, as he said, "experimented with an apparatus more expensive than had ever before been used, and yet within the reach and means of everybody." The result obtained from this experiment depends largely on the experience of the operators, and it can easily be reduced to $\frac{1}{10}$ of a second.

If Mr. Jastrow will consult the *American journal of science* for September, 1871, he will find an account of some experiments on reaction and distinction time made by the writer, in which, in addition to color and form, the exercise of distinguishing tones of different pitch was introduced. The 'distinction times' given in that article are considerably greater than those obtained by Mr. Jastrow. The time of a single reaction only was measured, and I strongly suspect that in all cases the time obtained from measuring the duration of a series of reactions rapidly succeeding each other will be found to be shorter than that deduced from single measurements. The reason for this is obvious.

T. C. MENDENHALL.

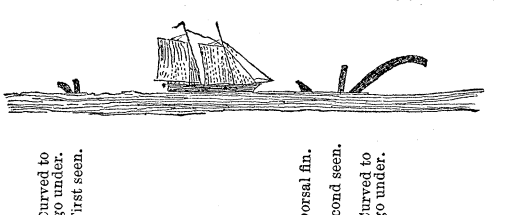
Washington, D.C., Sept. 13.

The sea-serpent.

With this please find an extract from an official report by Capt. Robert Platt, assistant coast and geodetic survey, with accompanying sketch of a 'sea-monster' seen by him near Cape Cod in October, 1878. Captain Platt is a trained observer, whose daily occupation at that time was to record just what he saw, and nothing more or less. I know Captain Platt so well that I have never doubted the existence of such a monster from the time his report was made known to me; and, if others have been sceptical, I hope that recent events have proven the matter beyond question.

[Extract from a report by Capt. Robert Platt, U. S. coast and geodetic survey, to the superintendent; written on board the U. S. coast-survey schooner Drift, Oct. 25, 1878.]

"I would also beg leave to state that Aug. 29, while becalmed off Race Point, Cape Cod, about four hundred yards from the vessel, we saw a sea-monster, or what I suppose has been called a sea-serpent. Its first appearance was that of a very large round spar two or three feet in diameter, from twelve to fifteen feet high, standing upright in the sea, but in a few minutes it made a curve and went down. It was visible about three minutes; the second appearance,



about half an hour after the first, the monster came out of the water about twenty-five feet, then extended to about thirty-five or forty feet, and about three feet in diameter; when out about forty feet, it curved and went down, and as it did so a sharp dorsal fin of about fifteen feet in length came up. This fin was connected to this monster, for the whole animal moved off with the same velocity. I looked at it with a good pair of glasses. I could not tell whether it had a mouth or eyes; it was of a brownish color. I enclose to you a rough sketch made by me, and submitted to all on board who saw the animal, and they all agree that it is a fair representation of the animal as it appeared." B. A. COLONNA.

U. S. coast survey, Sept. 4.